

PATENT  
Attorney Docket No. 00939-073600

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Sang Young Kim et al.

Application No.: 09/434,736

Filed: November 2, 1999

For: METHOD FOR FILLING  
CONTACT HOLES WITH METAL BY  
TWO-STEP DEPOSITION

Examiner:: E. T. Pert

Art Unit: 2813

AFFIDAVIT OF Hun Do Kim UNDER 37  
C.F.R. § 1.132

Assistant Commissioner for Patents  
U. S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

I am a joint inventor of the above-referenced patent application.

I have been involved in semiconductor processing for a number of years and am familiar with semiconductor processing techniques.

I understand the disclosure provided in United States Patent No. 5,683,938 filed on Oct. 24, 1994 and claiming priority to an abandoned United States Patent Application No. 964,362 (filed Oct. 21, 1992) and to a Korean Application filed on Oct. 21, 1991.

Figure 2A of the above-referenced patent application provides an accurate profile of the disclosed invention as claimed. The contact hole profile as illustrated in Fig. 2A comprises a generally vertical lower section with a tapered upper portion. The specification discloses that such a contact hole can be formed using wet and/or dry etching techniques.

Using the figures and written description provided in the Application, one of ordinary skill in the art of semiconductor processing could have formed contact holes (30) as illustrated in Fig. 2A without undue experimentation as of Oct. 21, 1991.

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PATENT

Sang Young Kim et al.  
Application No.: 09/434,736  
Page 2

Figures 2A-2B illustrate the step of filling the contact holes with a selective tungsten thin film 9. The contact holes are filled using the selective tungsten thin film by the CVD method. The selective tungsten thin film is overgrown as illustrated in Figure 2B to prevent misalignment with a second contact hole last formed above the first contact hole (see e.g., Fig. 2C).

Using the figures and written description provided in the Application, one of ordinary skill in the art of semiconductor processing could have filled the aforementioned contact holes in a single, continuous step without undue experimentation as of Oct. 21, 1991.

Based upon my personal knowledge and belief, I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both under §1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the patent application or any patent issuing thereon.

Executed on 21. June - 91 / chun - si, Rep. of Korea.

Kim Hun Do

Hun Do Kim

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